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The helminth fauna of bats *(Chiroptera)* of Lublin Palatinate

Helmintofauna nietoperzy (*Chiroptera*) woj. lubelskiego

The aim of the present work was to gain informations on the helminth fauna of bats which in our country was not closer studied (Łukasiak, 1939 — two dissections).

Conducting studies on the helminth fauna of insectivorous mammals (Sołtys, 1952, 1953) I decided to extend the investigations on bats, because the two groups of animals remain to each other in the closest relation. I expected to find parasites common to them but it appeared that in respect to the set of the helminth fauna the two groups of mammals occupy very distant positions.

I have collected the helminthological material during the period 1952 till 1955 from the beginning of April to the end of autumn. The material was taken from all the internal organs of bats caught mainly in the environs of Lublin. Unfortunately I did not secceed to obtain any material during the winter period, therefore it was impossible to compare the winter with summer helminths in order to determine the influence of the hibernation of the host on the parasites.

Postmortem examinations were conducted on 161 bats belonging to 11 out of the total number of 18 species occurring in Poland. To the species more commonly encountered belong: *Nyctalus noctula* (49 dissections), *Eptesicus serotinus* (39 dissections) and *Myotis daubentoni* (34 dissections). Other species of bats were caught in numbers ranging from 1 — 9 specimens.

The general percentage of invasion of bats with parasites amounted to 79, whereby 17 per cent of them were invaded with nematodes, 74 per cent — with trematodes and 13 per cent — with cestodes.

Table I represents parasites found in bats.

Table I

No	Host	Examined	Invaded	Trematoda								Cestoda		Nematoda		
				Plagiorchis vespertilionis	*Lecithodendrium linstowi*	*Lecithodendrium granulosum*	*Travassodendrium chilostomum*	*Travassodendrium magnum*	*Travassodendrium raabei* sp. n.	*Parabascus semisquamosum*	*Lecithodendriidae* indet.	*Hymenolepis christensoni*	*Hymenolepis* sp.	*Capillaria neopulchra*	*Molinostrongylus tipula*	*Physaloptera myotis*
1.	*Barbastella barbastella*	1	1								1					
2.	*Eptesicus serotinus*	39	30	30		2		2				10	1			1
3.	*Myotis bechsteini*	2	2													2
4.	*Myotis daubentoni*	34	25	15	1		1				3	1		10		1
5.	*Myotis myotis*	8	7			2						4		1		1
6.	*Myotis nattereri*	9	6	1	1									3		
7.	*Nyctalus noctula*	49	46	8	11	3	1	2	3	14	6	7		3	4	1
8.	*Pipistrellus nathusi*	2	1		1									1		1
9.	*Pipistrellus pipistrellus*	4	3	1	1											
10.	*Plecotus auritus*	5	2	1												
11.	*Rhinolophus hipposideros*	6	2	2												
12.	*Chiroptera* indet.	2	2	2												
	Total	161	127	60	15	7	2	4	3	14	10	22	1	18	4	7

The listed species of parasites of bats are recorded for the first time in Poland with the exception of the *Plagiorchis vespertilionis* (Müller, 1780) Braun, 1900 and *Lecithodendrium linstowi* Dollfus, 1931 found by Łukasiak (1939).

In the present description of the helminth fauna of bats the current new nomenclature of parasites and hosts is employed.

TREMATODA

Plagiorchis vespertilionis (Müller, 1780) Braun, 1900

Synonyms: *Fasciola vespertilionis* Müller, 1780; *Distoma lima* Rudolphi, 1800; *Fasciola picta* Rudolphi, 1802; *Distoma vespertilionis* Zeder, 1803; *Plagiorchis lima* Lühe, 1809; *Lepoderma vespertilionis* Looss, 1899.

Hosts: *Rhinolophus ferrum-equinum* Schreb., *R. hipposideros* Bechstein, *Plecotus auritus* L., *Myotis dasycneme* Boie, *M. myotis* Borkh., *M. mystacinus* Leisler in Kuhl, *M. nattereri* Kuhl, *M. daubentoni* Leisler in Kuhl, *M. bechsteini* Leisler in Kuhl, *Molossus nasutus* Geoffr., *M. rufus* Geoffr., *Eptesicus nilssoni* Keys. et Blas., *E. serotinus* Schreb., *Nyctalus noctula* Schreb., *Pipistrellus pipistrellus* Schreb.

Habitat: duodenum, small intestine, rectum.

Geographical distribution: Czechoslovakia, Germany, USSR, Poland, America.

Dimensions of this trematode collected by me show a wider range of fluctuations of the size of the body in comparison to the descriptions in the literature. However, other dimensions correspond to the range cited by other authors. In my material the testes occupy as a rule a constant position: the anterior testis lies on the left side of the body, the right testis, however, is situated closer to the right side of the body. The long bursa cirri extends between the ventral sucker and the ovary at the right side of the body. The metraterm is always situated at the left side of the ventral sucker. Such a course and location of the elements is in agreement with the descriptions in the literature; the opposite arrangement of those organs is described only by Ryšavý. (I presume that the error resulted from the opposite location of the trematode on the slide). In *P. vespertilionis* there occurs the oesophagus to which hitherto no attention was paid. I noticed that the size of the trematodes is dependent on the number of individuals in a host and on the species of the host: I found the largest trematodes in *Eptesicus serotinus*.

In my material I found this trematode in 30 *Eptesicus serotinus* (39 examined), in 15 *Myotis daubentoni* (34 examined), in 8 *Nyctalus noctula* (49 examined), in 2 *Rhinolophus hipposideros* (6 examined), in 1 *Myotis nattereri* (9 examined), in 1 *Pipistrellus pipistrellus* (4 examined), in 1 *Plecotus auritus* (5 examined), and in two undefined bats in 2 cases; the number of parasites amounted from 1 — 100 specimens.

Lecithodendrium Looss, 1896

In the description of the diagnosis of the genus *Lecithodendrium*, Skarbilovich (1948) reports that the testes are arranged symetrically at the sides of the body, posteriorly to the ventral sucker, and the ovary in the median line of the body posteriorly to the testes. In accordance with the data in the literature, as well as in the representatives of this genus found by me the testes are situated anteriorly, on the level of, or posteriorly to the ventral sucker. The ovary is situated on the level of the testes, or posteriorly to them. Therefore in respect to the location of the testes and the ovary I propose to introduce the following correction in the characteristic of this genus: „The testes are located at the sides of the body, anteriorly, on the level of, or posteriorly to the ventral sucker. The ovary is located on the level of the testes, or posteriorly to them, frequently it is displaced to the right side of the body".

Lecithodendrium (Lecithodendrium) linstowi Dollfus, 1931

Synonyms: *Distoma ascidia* Linstow, 1884; *Distoma lagena* Brandes, 1888; *Distoma ascidia* (van Beneden, 1876) Looss, 1894; *Lecithodendrium ascidia* Looss, 1896; *L. ascidia* Looss, 1899; *L. lagena* (Brandes, 1888) Looss, 1899; *Distomum ascidia* Lühe, 1909; *L. laguncula* Stiles et Nolan, 1931.

Hosts: *Vesperugo kuhli* Keys. et Blas., *Vespertilio murinus* Nilsson (according to van Beneden), *Pipistrellus pipistrellus* Schreb., *Myotis daubentoni* Leisler in Kuhl, *M. dasycneme* Boie, *M. emarginatus* Geoffr., *M. mystacinus* Leisler in Kuhl, *M. nattereri* Kuhl, *Plecotus auritus* L., *Rhinolophus hipposideros* Bechstein.

Habitat: intestine.

Geographical distribution: Europe, Africa (Egypt).

Dimensions of the body and of the separate organs are on the whole in agreement with the data cited by other authors. The dimen-

sions of the testes are not given in the description of this species. In my material they are: 0.068 — 0.1 mm.

The relation of the size of the oral sucker to the ventral sucker may be various: the oral sucker may be larger, equal, or smaller than the ventral sucker.

In my material this trematode occurred in 11 *Nyctalus noctula* (49 examined), in 1 *Myotis daubentoni* (34 examined) in 1 *Pipistrellus pipistrellus* (4 examined), and in 1 *P. nathusi* (2 examined).

Lecithodendrium (Lecithodendrium) granulosum Looss, 1907

Hosts: *Vesperugo kuhli* Keys. et Blas., *Rhinolophus ferrum-equinum* Schreb., *Eptesicus serotinus* Schreb., *Myotis myotis* Borkh., *Miniopterus schrebersi* Kuhl.

Habitat: duodenum, small intestine.

Geographical distribution: Czechoslovakia, Africa (Egypt).

In the discussed species I noticed a various relation between the size of the oral sucker and the ventral sucker: the oral sucker larger, equal, or smaller than the ventral sucker. The remaining features characteristic to this species correspond to the descriptions in the literature. It should be marked that the sole characteristic which differentiates *L. granulosum* from *L. linstowi* is the location of the ovary (In *L. granulosum* the ovary is always located between the ventral sucker and the right testis).

In my material this species occurred in 2 *Eptesicus serotinus* (39 examined), in 3 *Nyctalus noctula* (49 examined) and in 2 *Myotis myotis* (8 examined).

Parabascus semisquamosus (Braun, 1900)

Synonym: *Distomum semisquamosum* Braun, 1900.

Host: *Nyctalus noctula* Schreb.

Geographical distribution: hitherto found only once in Germany (Braun, 1900).

Because the description of this species given by Braun (1900) is not satisfactorily, a detailed description of this trematode is presented.

Length of the trematode 1.0 — 1.56 mm, width 0.25 — 0.4 mm. The posterior part of the body slightly spherical. The surface of the cuticle densely covered with spines on the distance of 2/3 of the body length. Oral sucker provided with fairly thin walls, its diameter

0.05 — 0.075 mm. Ventral sucker slightly moved anteriorly from the centre of the body, its length 0.03 mm. The oesophagus relatively long, 0.16 — 0.24 mm in length, passes on the level of the anterior rim of the vitelline glands into intestinal bifurcation. The posterior ends of the intestines extend almost to the posterior end of the body.

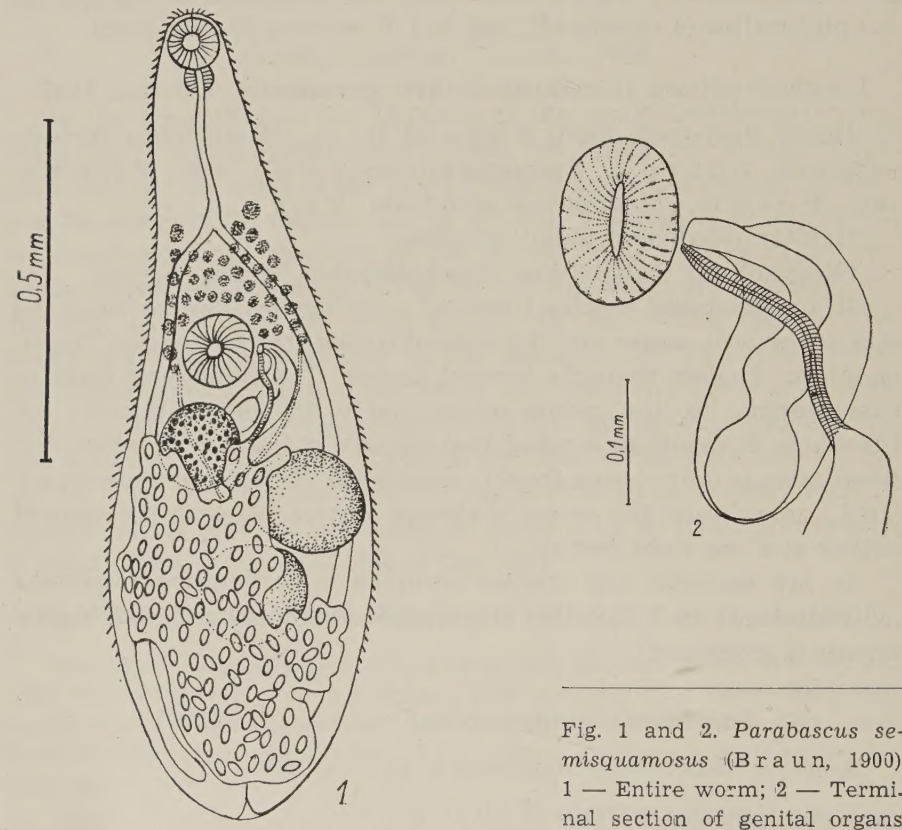

Fig. 1 and 2. *Parabascus semisquamosus* (B r a u n, 1900). 1 — Entire worm; 2 — Terminal section of genital organs.

The vitelline glands are situated in anterior part of the body and extend to the anterior margin of the ventral sucker. The genital organs are located in posterior part of the body, posteriorly to the ventral sucker. Fairly large, oval testes, 0.15 — 0.2 mm in size, are located at the lateral sides of the body, somewhat obliquely within the uterus. On the right side is located the oval ovary, 0.15 — 0.18 mm in size. Posteriorly to it is located the receptaculum seminis. The genital pores are located on the left side close to the ventral sucker.

Posteriorly to the genital pore there is a large bursa cirri in the form of a retort, 0.12 — 0.2 × 0.07 mm in size. Almost the whole posterior part of the body is occupied by the uterus. The eggs are dark-brown, oval, 0.02 × 0.01 mm in size.

This trematode was found in 14 *Nyctalus noctula* Schreber (49 examined). The number of parasites in one host was several.

Travassodendrium Skarbilovich, 1943

According to the accepted systematics all *Lecithodendriidae* in which the vitelline glands and the ovary are situated anteriorly to the ventral sucker belong to the genus *Travassodendrium* Skarbilovich, 1943. In view of this fact I am including all the hitherto described species of the genus *Prosthodendrium* Dollfus, 1931 which have the above described characteristics to the genus *Travassodendrium*. Two species belong here: *Travassodendrium chilostomum* (Mehlis, 1831) Dollfus, 1931 n. comb. and *Travassodendrium magnum* Ryšavý, 1956 n. comb.

Travassodendrium chilostomum (Mehlis, 1831) n. comb.

Synonyms: *Distomum chilostomum* Mehlis, 1831; *Distoma ascidioides* van Beneden, 1873; *Lecithodendrium chilostomum* Skrjabin, 1915; *Prosthodendrium chilostomum* (Mehlis, 1831) Dollfus, 1831.

Hosts: *Pipistrellus pipistrellus* Schreber, *Miniopterus schreibersi* Natterer in Kuhl, *Myotis mystacinus* Leisler in Kuhl, *M. nattereri* Kuhl.

Habitat: intestine.

Geographical distribution: Austria, Czechoslovakia, USSR.

The trematodes found by me correspond completely by their dimensions and morphological characteristics to the features of this species.

I found in my material *Travassodendrium chilostomum* in 1 *Nyctalus noctula* (49 examined) and in 1 *Myotis daubentoni* (34 examined).

Travassodendrium magnum Ryšavý, 1956 n. comb.

Synonym: *Prosthodendrium magnum* Rysavy, 1956.

Hosts: *Rhinolophus ferrum-equinum* Schreb.

Habitat: intestine.

Geographical distribution: Czechoslovakia.

Because the dimensions of my specimens differ from the individuals described by R y š a v ý I am presenting the comparative tabular arrangement of the data.

	Ryšavý (1956)	Sołtys
Length	1.67 — 1.81 mm	0.9 — 1.60 mm
Width	0.65 — 0.70 mm	0.23 — 0.8 mm
Oral sucker	0.28 — 0.29 mm	0.24 — 0.32 × 0.22 mm
Ventral sucker	0.24 — 0.29 mm	0.12 — 0.30 mm
Testes	0.19 — 0.22 mm	0.16 — 0.28 mm
Ovary	0.16 — 0.17 mm	0.19 — 0.20 mm
Eggs	0.026—0.032 mm × 0.012—0.016 mm	0.036×0.018 mm

In the material collected by me I found this trematode in 2 *Nyctalus noctula* (49 examined), and in 2 *Eptesicus serotinus* (39 examined).

Travassodendrium raabei sp. n.

Host: *Nyctalus noctula* S c h r e b.
Habitat: intestine.
Geographical distribution: Poland.

This is a small trematode in the form of an elongated pear. Its length is 0.8 — — 1.1 mm, maximal width 0.22 — 0.27 mm. Oral sucker 0.27 — 0.28 mm. Ventral sucker 0.14 — 0.16 mm. The size of the testes 0.12 — 0.18 mm; they are located symatrically at the sides of the body on the level of the ventral sucker. The size of the ovary 0.05 — 0.09 mm: its location is anteriorly to the ventral sucker. The vitelline gland consists of 11 — 12 vesicles, locater anteriorly to the ovary, on the level of the intestines, or posteriorly to the terminal parts of the in-

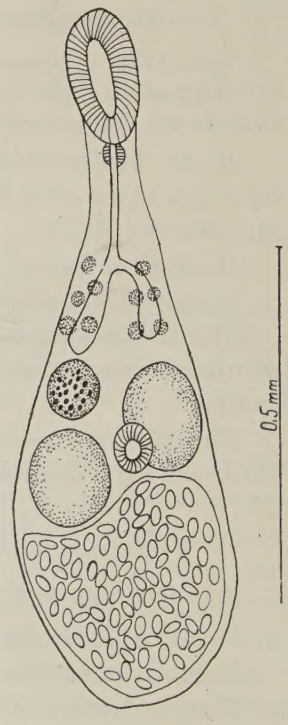

Fig. 3. *Travassodendrium raabei* sp. n.

testines. The posterior part of the body is occupied by the uterus filled with eggs; the size of the eggs 0.036 × 0.016 mm.

T. raabei sp. n.* differs from the hit hitherto described species of this genus by the larger dimensions of the oesophagus, characteristic shape of the body, size of the suckers, testes and ovary — as shown in the Table II.

In my material I found this trematode in 3 *Nyctalus noctula* (49 examined).

CESTOIDEA

Hymenolepididae Fuhrmann, 1907

Hymenolepis christensoni Macy, 1931

Hosts: *Myotis lucifugus* Leconte, *Miniopterus schreibersi* Kuhl.

Habitat: small intestine.

Geographical distribution: North America, Czechoslovakia.

I found *Hymenoleps christensoni* in 10 *Eptesicus serotinus* (39 examined), in 7 *Nyctalus noctula* (49 examined), in 4 *Myotis myotis* (8 examined), and in 1 *M. daubentoni* (34 examined).

Hymenolepis sp.

Because of the lack of the scolex I could not diagnose the species of this tapeworm. It differs from *H. christensoni* in that the testes are always arranged in a triangular. One specimen of this parasite was found by me in 1 *Eptesicus serotinus* (39 examined).

NEMATODA

Capillaria neopulchra Babos, 1954

Hosts: *Myotis daubentoni* Leisler in Kuhl, *M. myotis* Borkh.

Habitat: small intestine.

Geographical distribution: Hungary.

* The name *Travassodendrium raabei* sp. n. I am proposing to honour Professor Doctor Zdzisław Raabe, the Director of the Zoological Institute of the University of Warszawa.

Tab

Differential diagnosis of the species of the

No.	Species	Length	Width	Oral sucker	Ventral sucker
1.	*Tr. raabei* sp. n.	0.8—1.1	0.22—0.27	0.27—0.28	0.14—0.16
2.	*Tr. bhaleraoi* (Pande, 1935) Skarbilovich, 1943	2.69	1.5	0.47 × 0.37	0.32
3.	*Tr. chilostomum* (Mehlis, 1831) Dollfus, 1931 n. comb.	0.9—1.0	0.55	0.22 × 0.17	0.16—0.17
4.	*Tr. longiforme* (Bhalerao, 1926) Skarbilovich, 1947	2.14—3.4	1.07— —1.47	0.48— —0.55 × 0.46—0.47	0.32—0.37
5.	*Tr. longiforme* var, *allahabadi* (Pande, 1935) Skarbilovich, 1943	1.9—3.0	0.8	0.22—0.4 × 0.29—0,37	0.22 —0.3
6.	*Tr. magnum* Ryšavý, 1956 n. comb.	1.6—1.8	0.6—0.7	0.2	0.24—0.29
7.	*Tr. mehrai*(Pande,1953) Skarbilovich, 1943	0.85—1.0	0.65	0.25—0.28	0.08—0.09
8.	*Tr. piriforme*(Yamaguti, 1937) Skarbilovich, 1947	0.5—0.75	0.27— —0.46	0.15—0.2 × 0.12—0.18	0.08— —0.1
9.	*Tr. pushpai* (Bhalerao, 1936) Skarbilovich, 1943	1.07	0.97	0.175	0.16
10.	*Tr. oligolecithum* (Manter et Debus, 1945)	0.54—0.62	0.27—0.34	0.15—0.18	

le II
genus *Travassodendrium* Skarbilovich, 1943

Testis I	Testis II	Ovary	Vitellaria	Eggs	Hosts	Geogr. distr.
0.12—0.18		0.05—0.09	11—12	0.03×0.016	*Nyctalus noctula*	Poland
0.37-0.34	0.42	0.32×0.34	20—30	0.032×0.015	*Nycticejus kuhli*	India
0.255×0.187		0.17×0.136	6—7	0.035—0.04 × 0.018	*Chiroptera*	Europe
0.32—0.37 × 0.40—0.42		0.24—0.27 × 0.19—0.27	25—30	0.029—0.035 × 0.015—0.016	*Nictinomus plicatus*	India
0.27—0.46 × 0.2—0.4		0.22—0.34 × 0.17—0.37	20—30	0.032—0.035 × 0.015—0.017	*Nycticejus kuhli*	India
0.197—0.229 × 0.224—0.244		0.167—0.172	16—32	0.026—0.032 × 0.012—0.016	*Rhinolophus ferrum-equinum*	CSR
0.24		0.14—0.17	8—10	0.022—0.012	*Nycticejus dormeri*	India
0.078—0.10 × 0.066—0.09		0.068—0.11 × 0.054—0.10	7—8	0.03—0.033 × 0.015—0.019	*Rhinolophus ferrum-equinum*	Japan
0.24—0.26 × 0.2—0.24		0.125	many	0.025—0.028 × 0.012—0.015	*Nyctinomus plicatus*	India
0.09—0.10 × 0.06—0.08		0.07—0.08	7—9	0.020—0.025 × 0.012—0.013	*Myotis californicus*	USA

I found this species in 10 *Myotis daubentoni* (34 examined), in 3 *M. nattereri* (9 examined), in 3 *Nyctalus noctula* (49 examined), in 1 *Myotis myotis* (8 examined), and in 1 *Pipistrellus nathusi* (2 examined).

Molinostrongylus tipula (Beneden, 1873) Travassos, 1937

Hosts: *Myotis daubentoni* Leisler in Kuhl, *M. dasycneme* Boie, *Miniopterus schreibersi* Natterer in Kuhl, *Nyctalus noctula* Schreb., *Vespertilio murinus* L.

Habitat: intestine.

Geographical distribution: Belgium.

The body of the male 2.0 mm, width 0.057 mm, length of spiculae 0.075 mm.

The body length of the female 2.3 — 2.5 mm, its width 0.057 mm. The vulva situated at the distance of 0.78 mm from the posterior end of the body. The length of the ovejector 0.198 mm. Anus situated at the distance of 0.09 mm from the posterior end of the body. The posterior end of the body is straight and provided with three elongations. The size of the eggs 0.096 × 0.045 mm; they contain a formed larva.

In my material *M. tipula* was found in 4 *Nyctalus noctula* (49 examined).

Physaloptera myotis Babos, 1954

Hosts: *Myotis oxygnatus* Monticelli, *M. myotis* Schreb., *Miniopterus schreibersi* Natterer in Kuhl, *Rhinolophus hipposideros* Bechstein.

Habitat: stomach and intestine.

Geographical distribution: Hungary and Czechoslovakia.

This nematode occurred in my material in 1 *Eptesicus serotinus* (39 examined), in 2 *Myotis bechsteini* (2 examined), in 1 *M. daubentoni* (34 examined), in 1 *M. myotis* (8 examined), in 1 *Nyctalus noctula* (49 examined), and in 1 *Pipistrellus nathusi* (2 examined).

Larvae of those nematodes were found in the gastric wall in 2 bats.

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Table III

Helminths of bats living in Europe

No.	Host		
1	*Rhinolophus hipposideros* Bechstein		
2	*R. ferrum-equinum* Schreb.		
3	*Barbastella barbastella* Schreb.		
4	*Plecotus auritus* L.		
5	*Myotis bechsteini* Leisler in Kuhl		
6	*Myotis myotis* Borkh.		
7	*Myotis nattereri* Kuhl.		
8	*Myotis dasycneme* Boie		
9	*Myotis daubentoni* Kuhl.		
10	*Myotis mystacinus* Leisler		
11	*Nyctalus noctula* Schreb.		
12	*Nyctalus leisleri* Kuhl.		
13	*Eptesicus serotinus* Schreb.		
14	*Eptesicus nilsoni* Keys. et Blas.		
15	*Vespertilio discolor* Natt. in Kuhl		
16	*Pipistrellus pipistrellus* Schreb.		
17	*Pipistrellus savii* Bonaparte		
18	*Pipistrellus nathusi* Keys. et Blas.		
	Castrova nyctali Gwozdiew, 1953	*Trematoda*	
	Euparyphium trigonocephalum Rud., 1802		
	Gyrobascus brevigastrus Modl., 1950		
	Lecithodendrium granulosum Looss, 1907		
	Lecithodendrium linstowi Dollfus, 1941		
	Mesotretes peregrinus Braun, 1900		
	Parabascus semisquamosum (Braun, 1900)		
	Plagiorchis asperus Stossich, 1904		
	Plagiorchis vespertilionis (Müller, 1780)		
	Pycnoporus skarbilovichi Shald., 1948		
	Travassodendrium chilostomum (Mehlis, 1831)		
	Travassodendrium magnum (Ryšavý, 1956)		
	Travassodendrium piriforme (Yam., 1939)		
	Travassodendrium raabei sp.n.		
	Travassodendrium rhinolophi Ryšavý, 1956		
	Prosthodendrium erhardovae Ryšavý, 1956		
	Prosthodendrium cordiforme (Braun, 1900)		
	Cycloskrjabinia sp.	*Cestoda*	
	Hymenolepis acuta (Rudolphi, 1814)		
	Hymenolepis balsaci Joyeux et Baer, 1934		
	Hymenolepis christensoni Macy, 1931		
	Hymenolepis grisea (Beneden, 1873)		
	Hymenolepis (s.l.) *moniezi* Parona, 1893		
	Taenia obtusata (Rudolphi, 1814)		
	Taenia vespertilionis-auriti (Rud., 1819)		
	Strobilocercus fasciolaris (Rud., 1808)		
	Agamospirura gen. sp.	*Nematoda*	
	Capillaria diesingi (Kolenati, 1856)		
	Capillaria dubia Ricci, 1949		
	Capillaria italica Ricci, 1949		
	Capillaria rara Ricci, 1949		
	Capillaria neopulchra Babos, 1954		
	Capillaria vespertilionis (Rud., 1819)		
	Capillaria speciosa (Ben., 1879)		
	Litosoma filaria (Beneden, 1873)		
	Molinostrongylus alatus (Ortlepp, 1932)		
	Molinostrongylus skrjabini Skarbil., 1954		
	Molinostrogylus tipula (Beneden, 1873)		
	Paralostostrongylus vigueraci Lopez-Neyra, 1946		
	Physaloptera myotis Babos, 1954		
	Rictularia bowei (Blanchard, 1886)		
	Rictularia plagiostoma Wedl. 1861		
	Spirocerca sanguinolenta (larva)		
	Strongyloacantha (*Acuariinae*) Beneden, 1873		
	Trichuroides chiropteri Ricci, 1949		
	Molinostrongylus rhinolophi Yam., 1942		

+ found in Europe; = found in Poland by the present author.

LITERATURE

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STRESZCZENIE

Autor zbadał 161 nietoperzy, należących do 11 gatunków. Do częściej spotykanych należą: *Nyctalus noctula* (49 sekcji), *Eptesicus serotinus* (39 sekcji) i *Myotis daubentoni* (34 sekcje). Pozostałe gatunki nietoperzy złowiono w ilości 1 — 9 osobników.

Ogólna ekstensywność inwazji wynosi 79 %; przywrami zarażonych było 74 %, tasiemcami 13 % i nicieniami 17 % nietoperzy.

Stwierdzono następujące gatunki pasożytów: *Plagiorchis vespertilionis* (Müll.), *Lecithodendrium linstowi* Dollf., *L. granulosum* Looss, *Parabascus semisquamosus* (Braun), *Travassodendrium chilostomum* (Mehlis), *T. magnum* (Ryšavý), *T. raabei* sp. n., *Hymenolepis christensoni* Macy, *Hymenolepis* sp., *Capillaria neopulchra* Babos, *Molinostrongylus tipula* (Ben.) i *Physaloptera myotis* Babos.

Wszystkie znalezione przez autora pasożyty są nowe dla Polski, z wyjątkiem *Plagiorchis vespertilionis* (Müll.) i *Lecithodendrium linstowi* Dollf., które były wykazane przez Łukasiaka (1939).

Nowy gatunek — *Travassodendrium raabei* sp. n. — znaleziony w jelicie *Nyctalus noctula* (u 3 na 49 zbadanych), różni się od dotychczas opisanych gatunków tego rodzaju większymi wymiarami przełyku, charakterystycznym kształtem ciała oraz wielkością przyssawek, jąder i jajnika (tabela II).